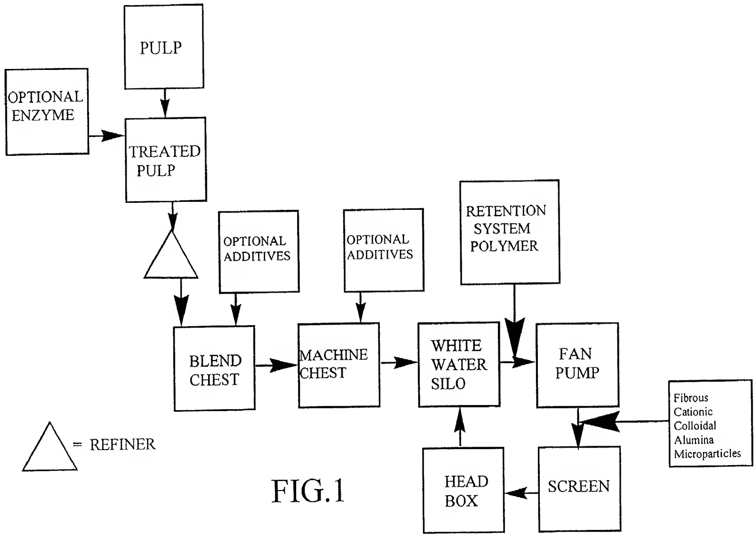
PULP
OPTIONAL ENZYME
TREATED PULP
OPTIONAL ADDITIVES
OPTIONAL ADDITIVES
RETENTION SYSTEM POLYMER
BLEND CHEST
MACHINE CHEST
WHITE WATER SILO
FAN PUMP
Fibrous
Cationic
Colloidal
Alumina
Microparticles
HEAD BOX
SCREEN
= REFINER

FIG.1

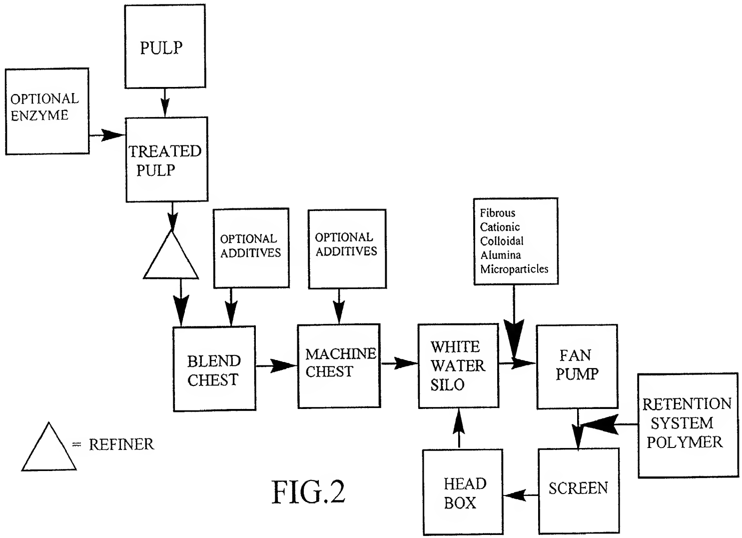
PULP
OPTIONAL ENZYME
TREATED PULP
OPTIONAL ADDITIVES
OPTIONAL ADDITIVES
Fibrous Cationic Colloidal Alumina Microparticles
BLEND CHEST
MACHINE CHEST
WHITE WATER SILO
FAN PUMP
RETENTION SYSTEM POLYMER
HEAD BOX
SCREEN
= REFINER

FIG.2

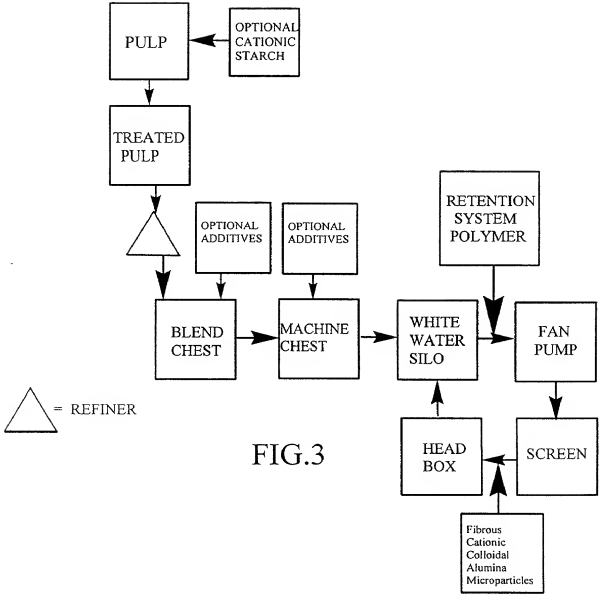
PULP
OPTIONAL CATIONIC STARCH
TREATED PULP
OPTIONAL ADDITIVES
OPTIONAL ADDITIVES
RETENTION SYSTEM POLYMER
BLEND CHEST
MACHINE CHEST
WHITE WATER SILO
FAN PUMP
= REFINER
HEAD BOX
SCREEN
Fibrous Cationic Colloidal Alumina Microparticles

FIG.3

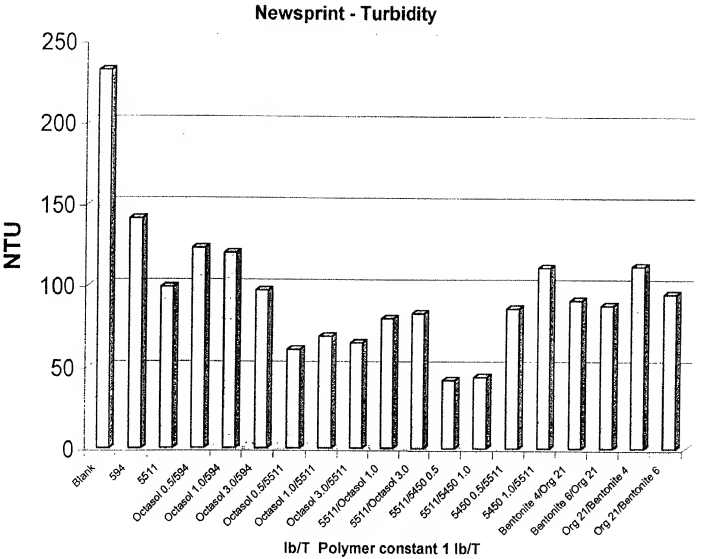

FIG. 4

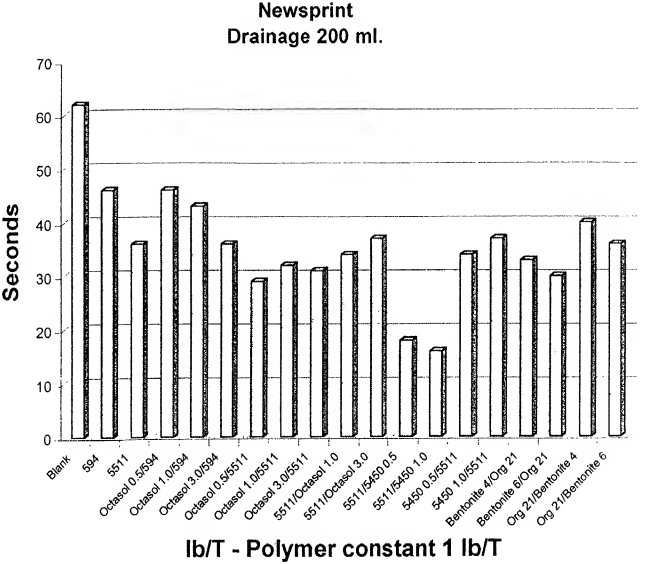

FIG. 5

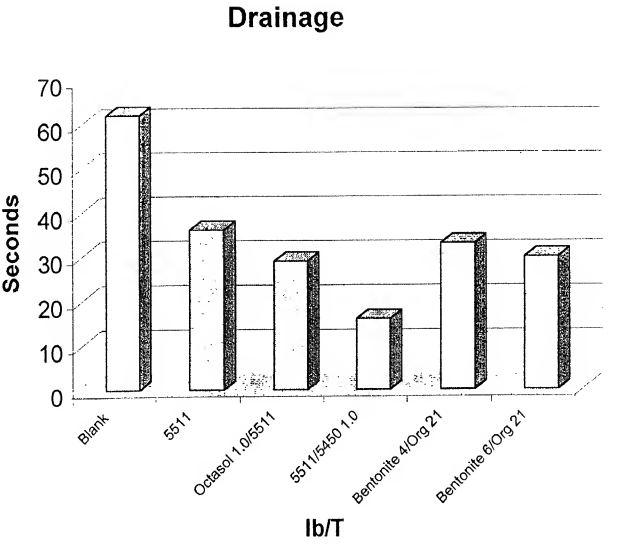

FIG. 6

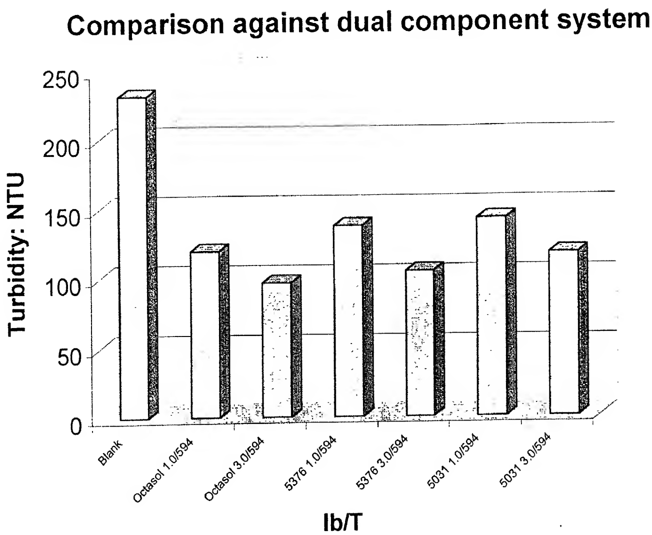
Comparison against dual component system
250
200
150
100
50
0
Turbidity: NTU
Blank
Octasol 1.0/594
Octasol 3.0/594
5376 1.0/594
5376 3.0/594
5031 1.0/594
5031 3.0/594
lb/T

FIG. 7

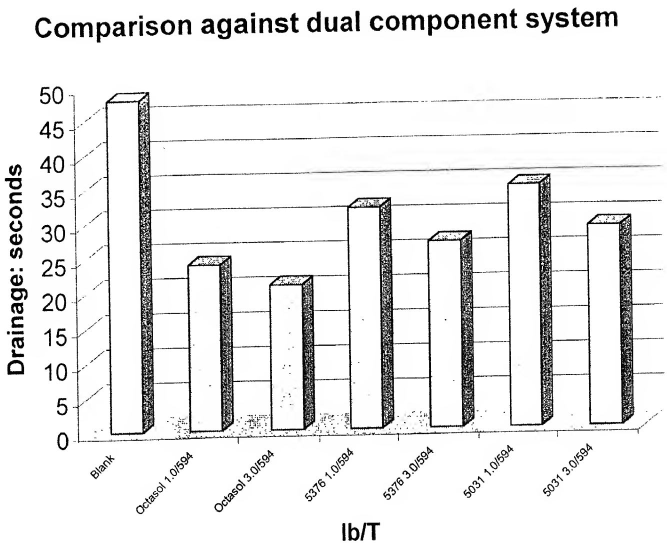
Comparison against dual component system
Drainage: seconds
50
45
40
35
30
25
20
15
10
5
0
Blank
Octasol 1.0/594
Octasol 3.0/594
5376 1.0/594
5376 3.0/594
5031 1.0/594
5031 3.0/594
lb/T

FIG. 8

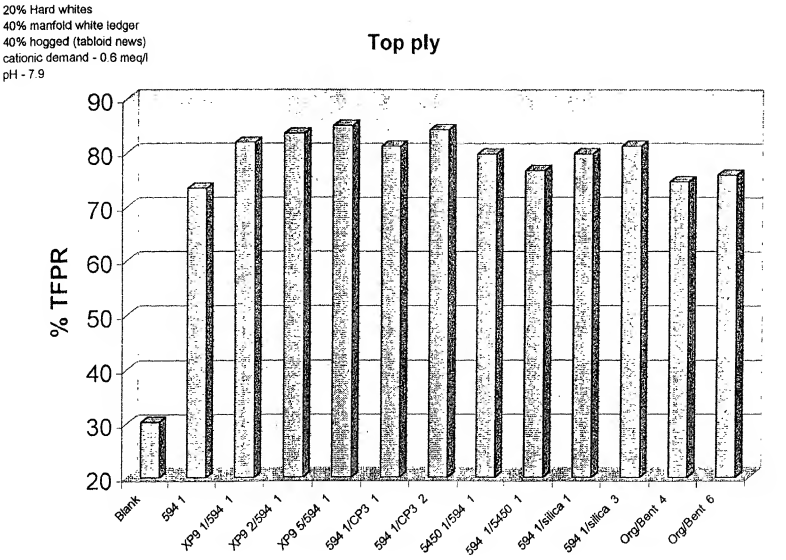
20% Hard whites
40% manfold white ledger
40% hogged (tabloid news)
cationic demand - 0.6 meq/l
pH - 7.9
Top ply
% TFPR
90
80
70
60
50
40
30
20
Blank
594 1
XP9 1/594 1
XP9 2/594 1
XP9 5/594 1
594 1/CP3 1
594 1/CP3 2
5450 1/594 1
594 1/5450 1
594 1/silica 1
594 1/silica 3
Org/Bent 4
Org/Bent 6

FIG. 9

20% Hard whites
40% manfold white ledger
40% hogged (tabloid news)
cationic demand - 0.6 meq/l
pH - 7 9

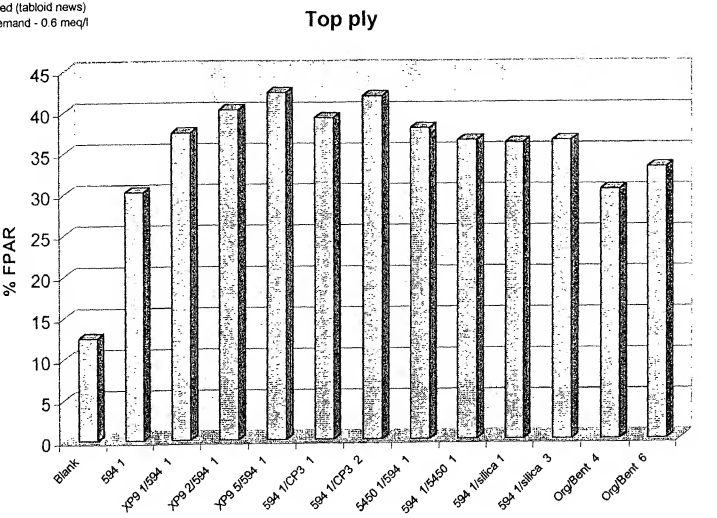

FIG. 10

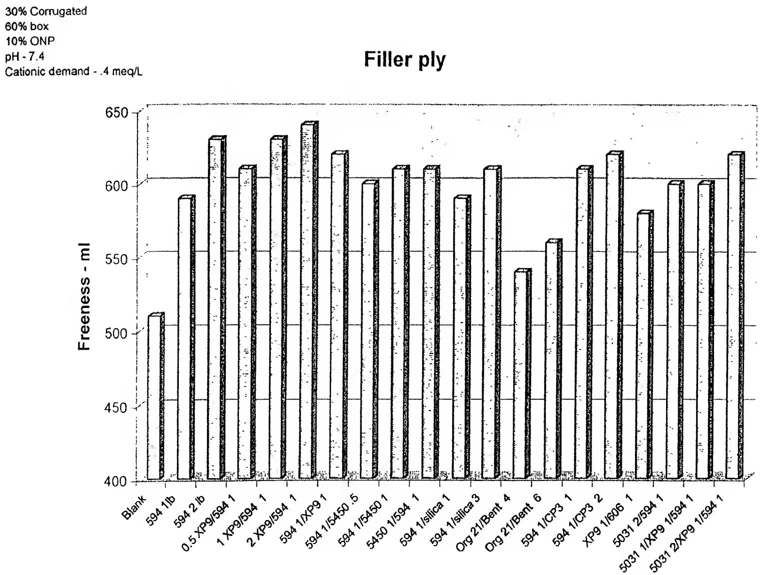
30% Corrugated
60% box
10% ONP
pH - 7.4
Cationic demand - .4 meq/L
Filler ply
Freeness - ml
650
600
550
500
450
400
Blank
594 1lb
594 2 lb
0.5 XP9/594 1
1 XP9/594 1
2 XP9/594 1
594 1/XP9 1
594 1/5450 .5
594 1/5450 1
5450 1/594 1
594 1/silica 1
594 1/silica 3
Org 21/Bent 4
Org 21/Bent 6
594 1/CP3 1
594 1/CP3 2
XP9 1/606 1
5031 2/594 1
5031 1/XP9 1/594 1
5031 2/XP9 1/594 1

FIG. 11

100% ONP
pH -7 85
Cationic demand- .55 meq/L

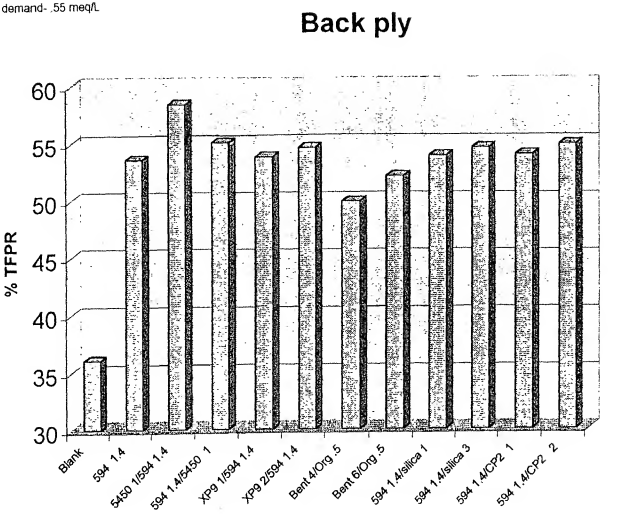

FIG. 12

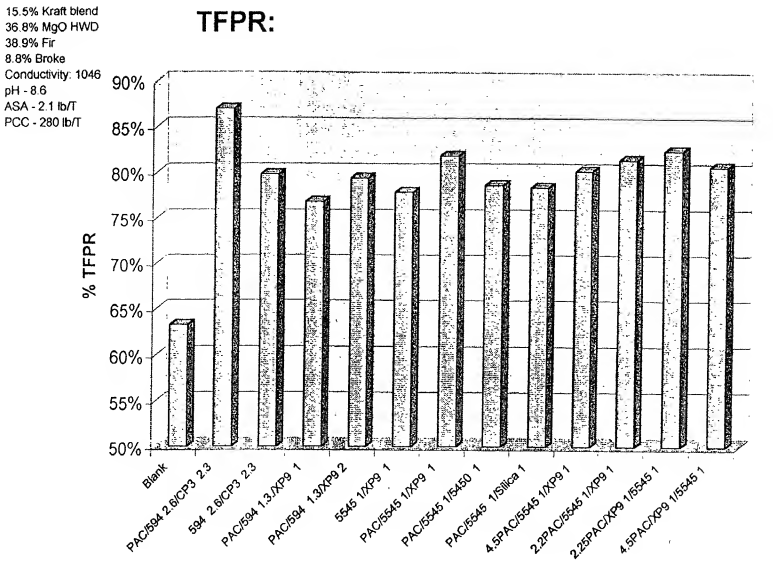

FIG. 13

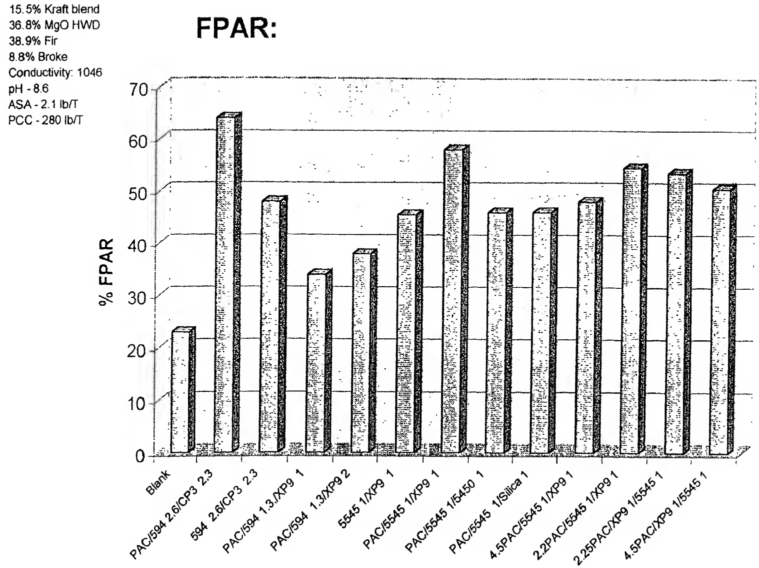
15.5% Kraft blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
Conductivity: 1046
pH - 8.6
ASA - 2.1 lb/T
PCC - 280 lb/T
FPAR:
% FPAR
70
60
50
40
30
20
10
0
Blank
PAC/594 2.6/CP3 2.3
594 2.6/CP3 2.3
PAC/594 1.3,/XP9 1
PAC/594 1.3/XP9 2
5545 1/XP9 1
PAC/5545 1/XP9 1
PAC/5545 1/5450 1
PAC/5545 1/Silica 1
4.5PAC/5545 1/XP9 1
2.2PAC/5545 1/XP9 1
2.25PAC/XP9 1/5545 1
4.5PAC/XP9 1/5545 1

FIG. 14

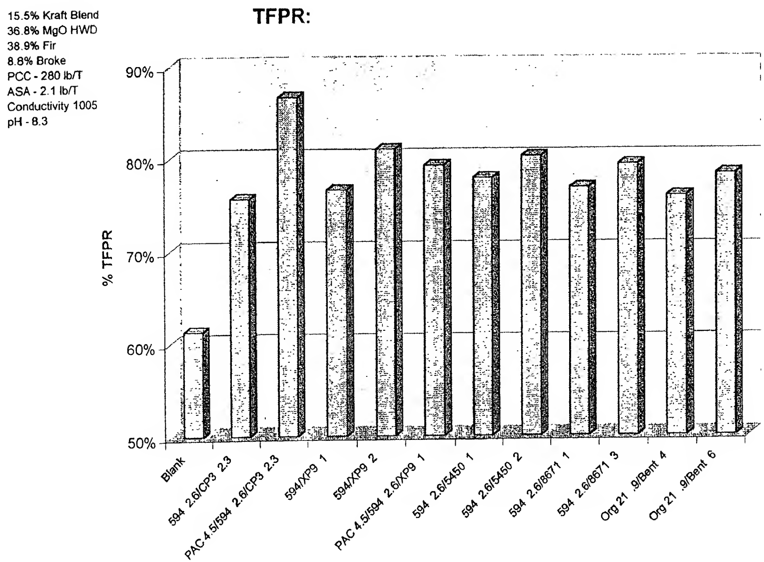
15.5% Kraft Blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
PCC - 280 lb/T
ASA - 2.1 lb/T
Conductivity 1005
pH - 8.3
TFPR:
% TFPR
90%
80%
70%
60%
50%
Blank
594 2.6/CP3 2.3
PAC 4.5/594 2.6/CP3 2.3
594/XP9 1
594/XP9 2
PAC 4.5/594 2.6/XP9 1
594 2.6/5450 1
594 2.6/5450 2
594 2.6/8671 1
594 2.6/8671 3
Org 21 .9/Bent 4
Org 21 .9/Bent 6

FIG. 15

15.5% Kraft Blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
PCC - 280 lb/T
ASA - 2.1 lb/T
Conductivity 1005
pH - 8.3

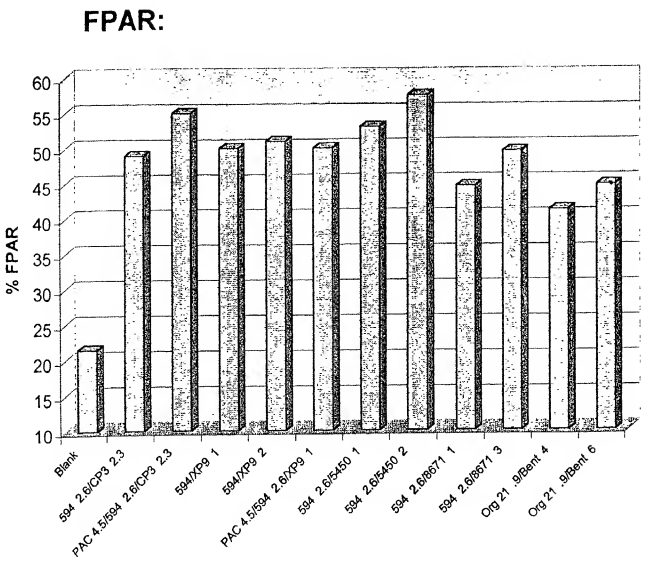

FIG. 16

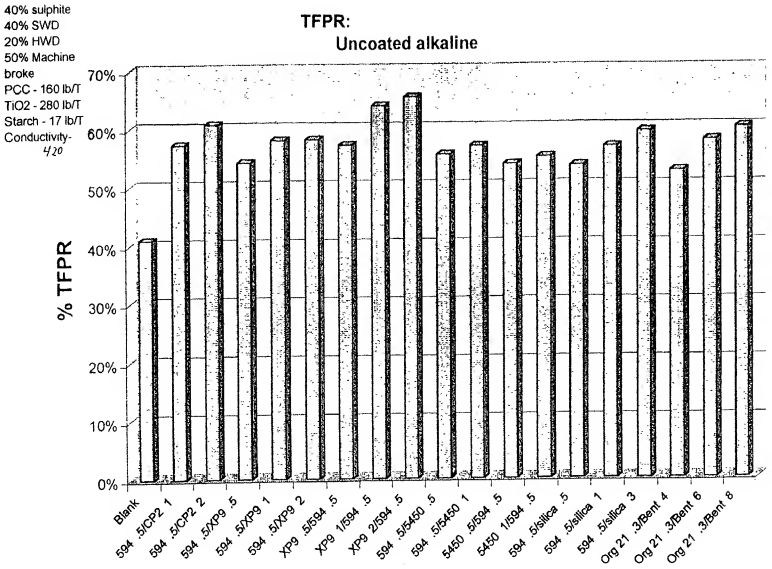

FIG. 17

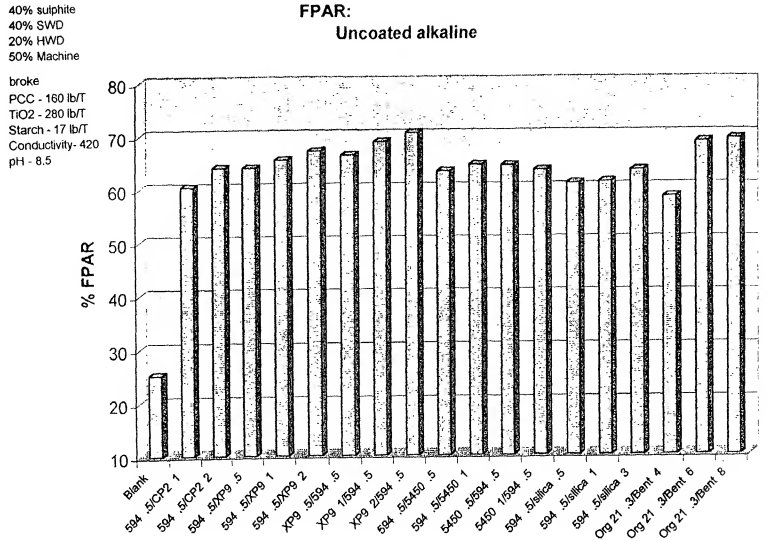

FIG. 18

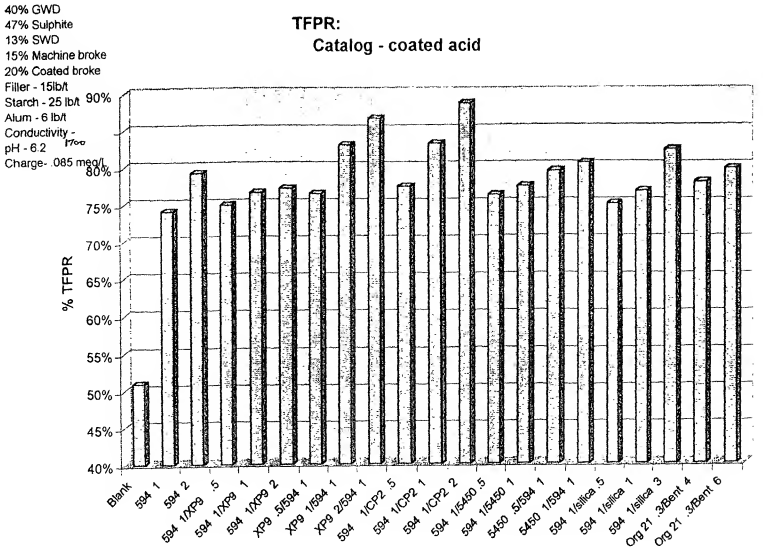

FIG. 19

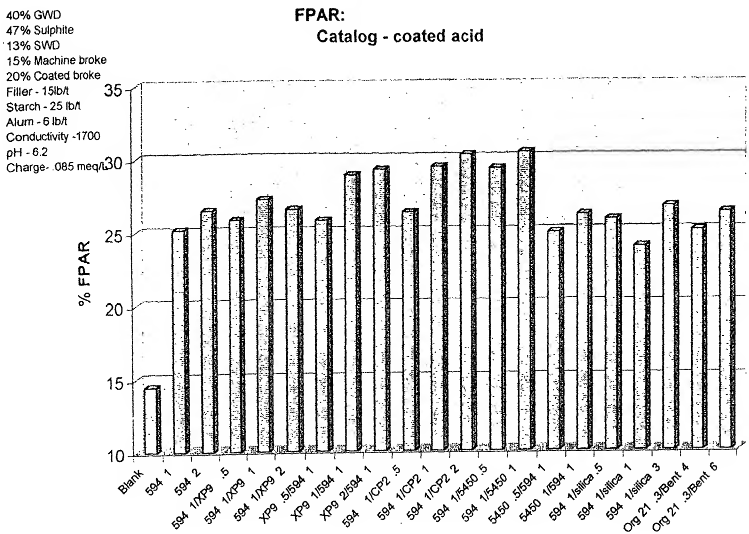
40% GWD
47% Sulphite
13% SWD
15% Machine broke
20% Coated broke
Filler - 15lb/t
Starch - 25 lb/t
Alum - 6 lb/t
Conductivity -1700
pH - 6.2
Charge- .085 meq/L
FPAR:
Catalog - coated acid
% FPAR
35
30
25
20
15
10
Blank
594 1
594 2
594 1/XP9 .5
594 1/XP9 1
594 1/XP9 2
XP9 .5/594 1
XP9 1/594 1
XP9 2/594 1
594 1/CP2 .5
594 1/CP2 1
594 1/CP2 2
594 1/5450 .5
594 1/5450 1
5450 .5/594 1
5450 1/594 1
594 1/silica .5
594 1/silica 1
594 1/silica 3
Org 21 .3/Bent 4
Org 21 .3/Bent 6

FIG. 20

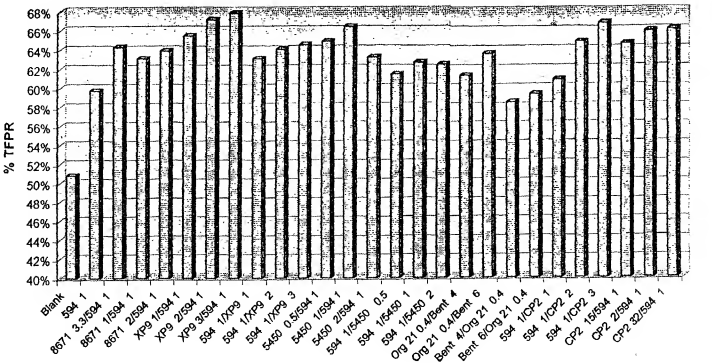
% TFPR
68%
66%
64%
62%
60%
58%
56%
54%
52%
50%
48%
46%
44%
42%
40%
Blank
594 1
8671 3.3/594 1
8671 1/594 1
8671 2/594 1
XP9 1/594 1
XP9 2/594 1
XP9 3/594 1
594 1/XP9 1
594 1/XP9 2
594 1/XP9 3
5450 0.5/594 1
5450 1/594 1
5450 2/594 1
594 1/5450 0.5
594 1/5450 1
594 1/5450 2
Org 21 0.4/Bent 4
Org 21 0.4/Bent 6
Bent 4/Org 21 0.4
Bent 6/Org 21 0.4
594 1/CP2 0.4
594 1/CP2 1
594 1/CP2 2
594 1/CP2 3
CP2 1/594 1
CP2 2/594 1
CP2 32/594 1

FIG. 21

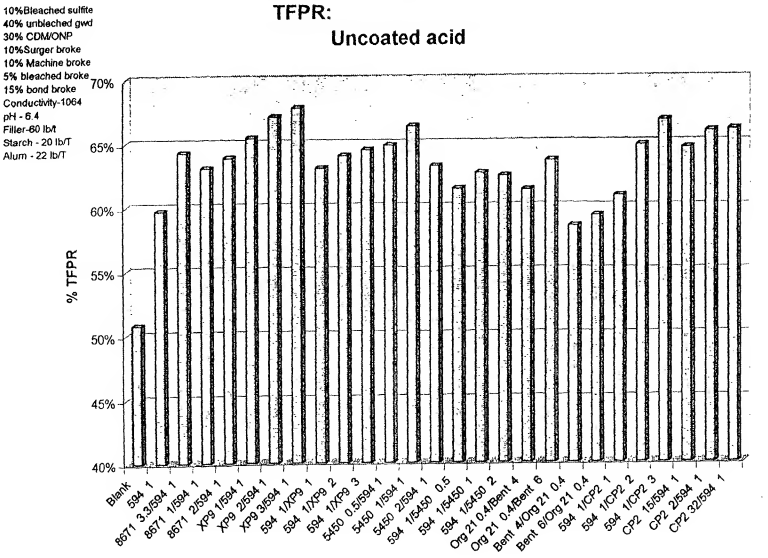

FIG. 22

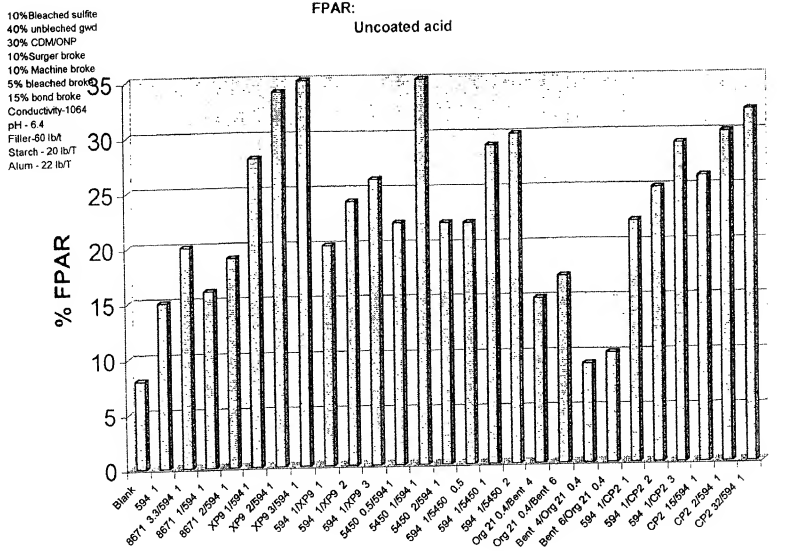

FIG. 23

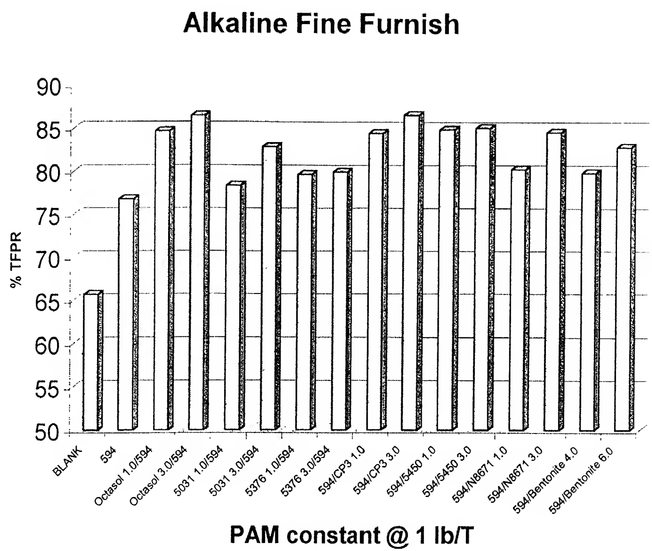
Alkaline Fine Furnish
% TFPR
90
85
80
75
70
65
60
55
50
BLANK
594
Octasol 1.0/594
Octasol 3.0/594
5031 1.0/594
5031 3.0/594
5376 1.0/594
5376 3.0/594
594/CP3 1.0
594/CP3 3.0
594/5450 1.0
594/5450 3.0
594/N8671 1.0
594/N8671 3.0
594/Bentonite 4.0
594/Bentonite 6.0
PAM constant @ 1 lb/T

FIG. 24

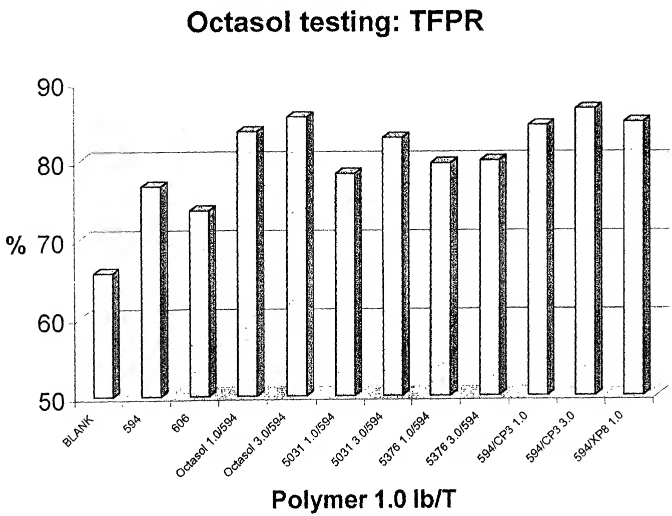
Octasol testing: TFPR
90
80
% 70
60
50
BLANK
594
606
Octasol 1.0/594
Octasol 3.0/594
5031 1.0/594
5031 3.0/594
5376 1.0/594
5376 3.0/594
594/CP3 1.0
594/CP3 3.0
594/XP8 1.0
Polymer 1.0 lb/T

FIG. 25

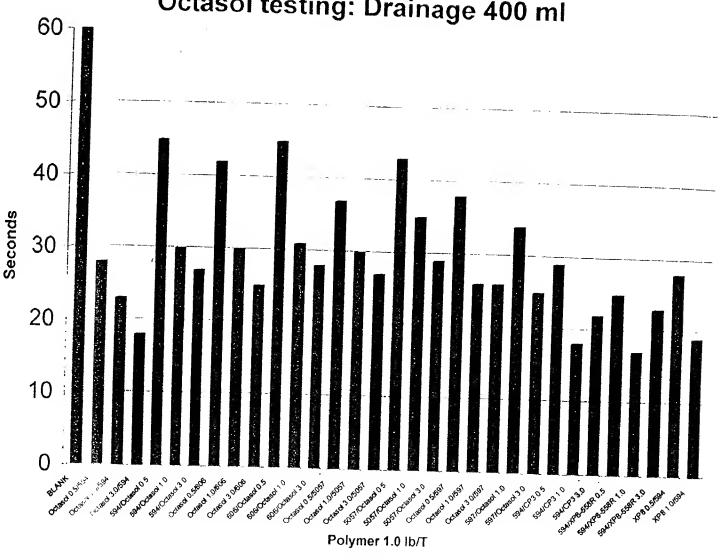
Octasol testing: Drainage 400 ml
Seconds
60
50
40
30
20
10
0
BLANK
Polymer 1.0 lb/T

FIG. 26